

Vegetation: Environment Relationships and Water Management in Shark Slough, Everglades National Park

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Vegetation in Shark Slough comprises a complex mosaic of marsh assemblages, spotted liberally with tree islands. Controls on this pattern are not completely understood, but hydrologic and edaphic variables, as well as disturbance history, are likely to play important roles. In this presentation, we use data from five cross-Slough transects sampled in 1998-99 to test and describe the association of marsh vegetation with several hydrologic parameters. By accounting for spatial autocorrelation, our analyses yielded estimates of both mean and variance in annual hydroperiod, mean water depth, and 30-day maximum water depth within each vegetation unit during the 1990's. We found clear and consistent differences in the hydrologic regime of three marsh vegetation types, in the direction expected based on the existing literature, i.e., hydroperiod and water depths increased in the order Tall Sawgrass Marsh < Sparse Sawgrass Marsh < Spikerush Marsh. Locally, these differences were quite subtle; within a single portion of Shark Slough, mean annual values for the two water depth parameters varied less than 15 cm among types, and hydroperiods varied by 65 days or less. More significantly, perhaps, regional variation equaled or exceeded the variation attributable to vegetation type within a small area. For instance, estimated hydroperiods for Tall Sawgrass in Western Shark Slough were longer than for Spikerush Marsh in any of the other Regions. Although some of this regional variation may reflect a natural gradient from the northern to southern Slough, we know that much is the result of management and compartmentalization of Northeast Shark Slough from Western Shark Slough. If hydroperiod or water depth are proximate causes of vegetation pattern within regions, as these data indicate, it seems likely that current water management will eventually result in large scale changes in landscape pattern within Shark Slough, or perhaps already has.

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